Indigenous Pharmacology

Sanskrit name and Synonyms of common medicinal plants

- Nelli: Amalaki, Amla, Dhathri

Aralu- Harithaki, Abhaya, Pathya

Bulu: Vibhithaka, bibithaki, Aksha

- Tippili: Pippali, Kana, Maghadi

Enasal: Ela,Thruti,Sukshma Ela

Inguru: Shunti, Ardaka, Shrungavera

Gammiris: Maricha,Krishna, Ushna

Kurundu: Thwak, Chocham, Darusitha

Karbuneti: Lavanga,Deva Kusuma, Deva Pushspa

Hathavariya: Shathavari, Shata muli, Bahu muli

- Garlic: Lashuna,Rasona
- Rasakinda: Guduchi, Chakralakshanika, Amurtha

- Val mee: Yashti, Yashti Madhu, Madhu Yashti

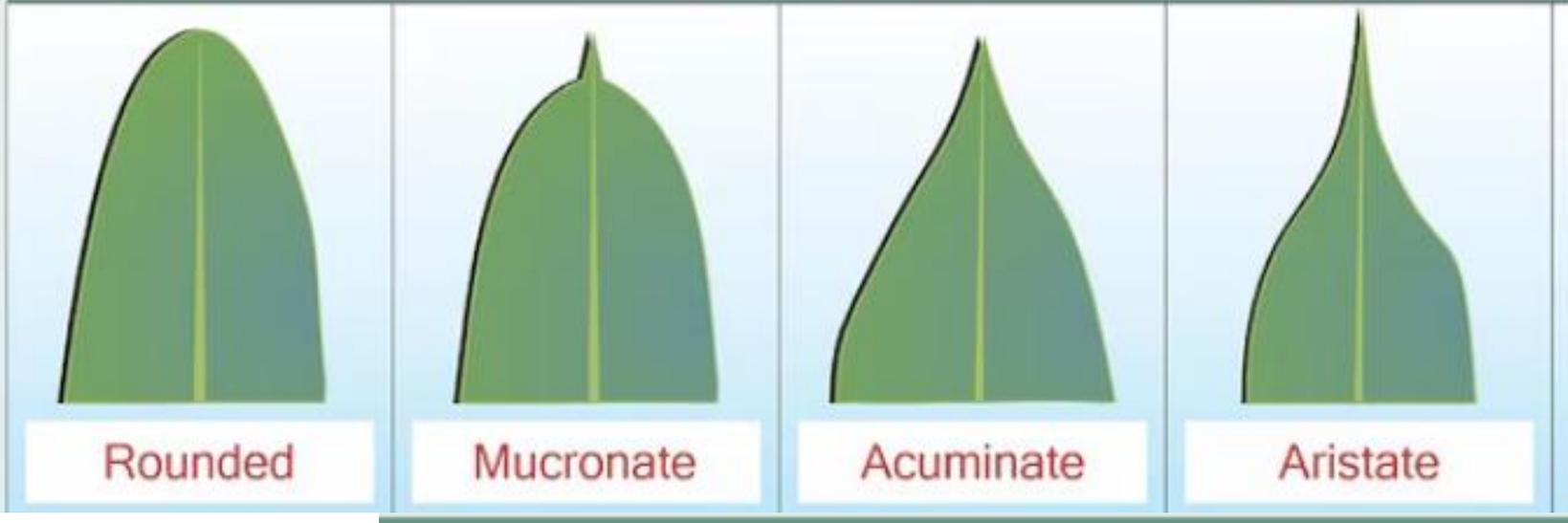
- Nika: Nirgundi, Sindhuvara
- Ehela: Aragvadha, Rajavruksha, Deergapala ,Shamyaka,
- Kohombha:Indian lilac, Margosa: Nimbha, Arishta
- Komarika: Kumari, Grithakumari, Kanya
- Kaha: Haridra, Nisha, Kaanchani
- Veniwel:Daruharidra, Pitha Chandana, Kaliiyaka

Pathpadagam: Parpata, Parpataka, Grishmasundara

Adathoda: Vasa, Vrusha, Vrushaka

APICES

Leaf apices refer to the tips or ends of leaves, which can vary in shape such



as pointed, rounded, notched, or blunt, playing a role in the identification and classification of plant species.

LEAF SHAPES

Leaf shape, including overall form, edge type, and base and tip features, is essential

Oval

Ovate

Obovate

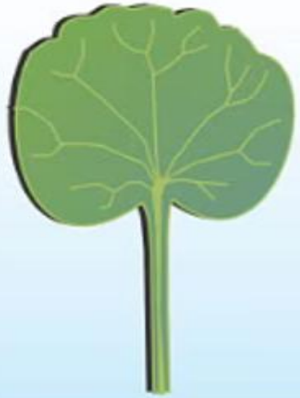
Deltate

Circular
Orbicular

or botanical classification and species identification.

Cordate

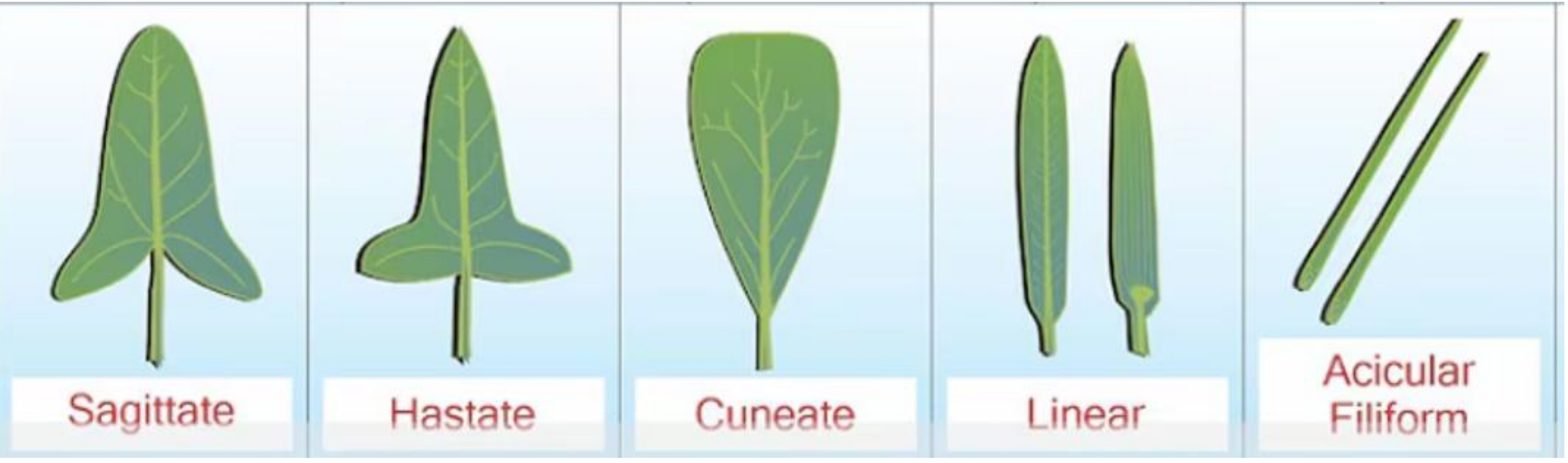
Obcordate

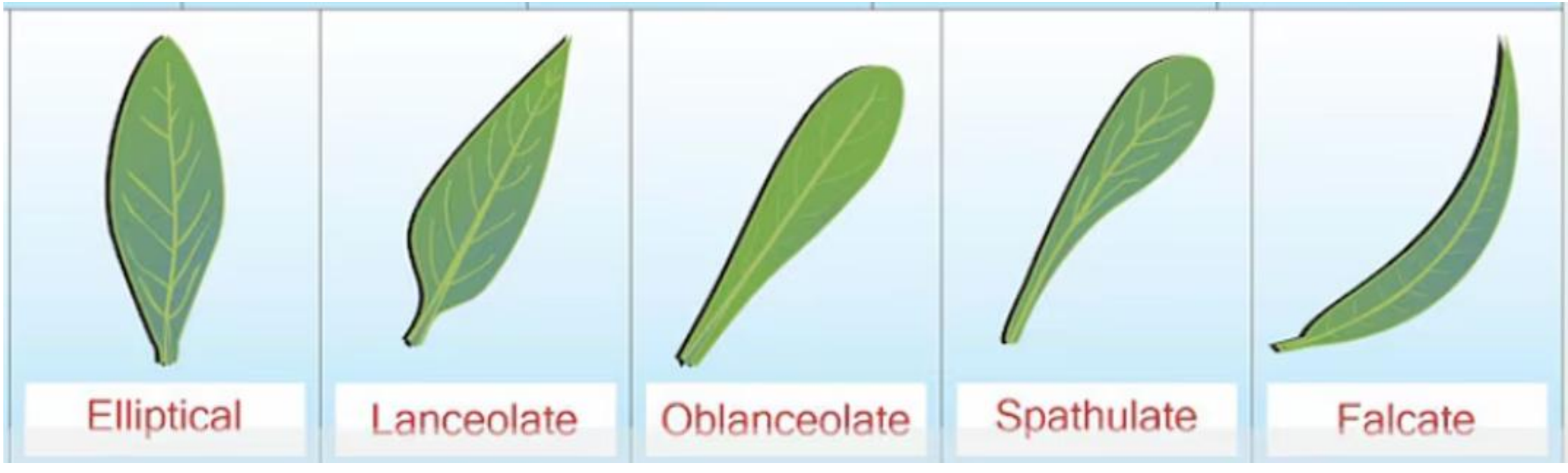


Reniform

Oblong

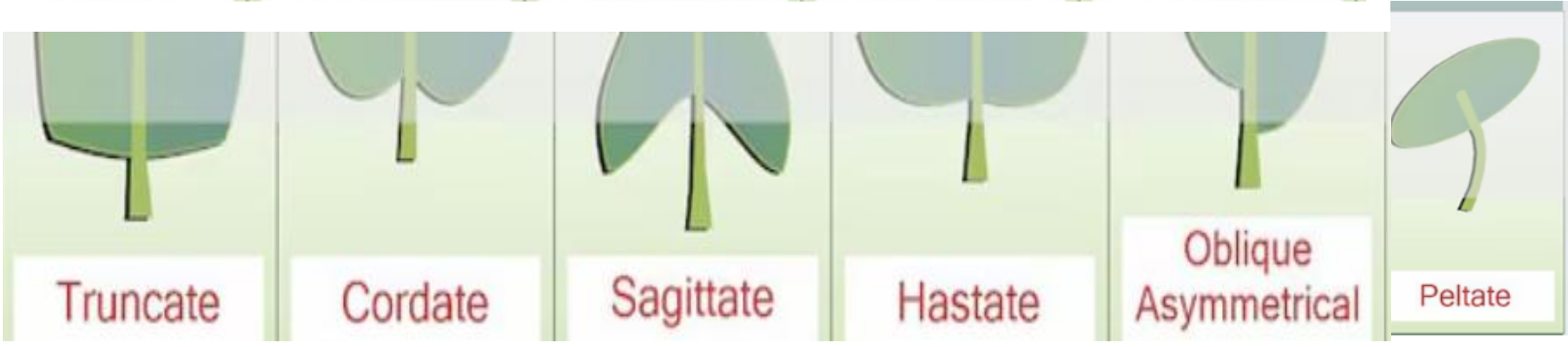
Leaf shapes


Sagittate
Hastate
Cuneate
Linear
Acicular
Filiform


Elliptical
Lanceolate
Oblanceolate
Spathulate
Falcate

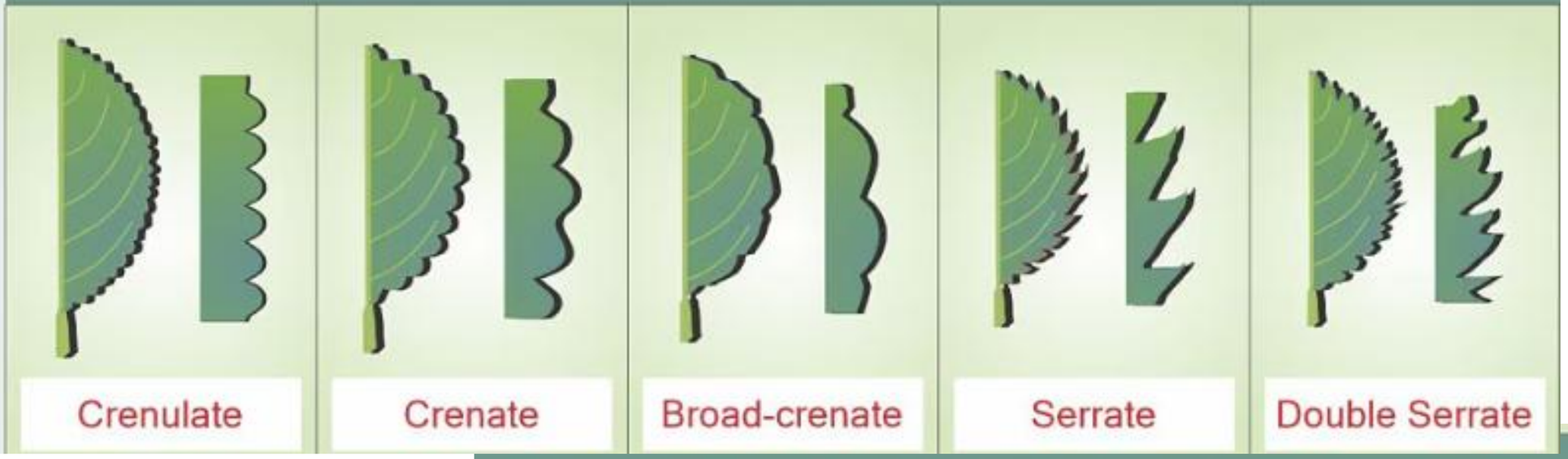
Leaf base

Acute
Rounded
Attenuate
Cuneate
Obtuse

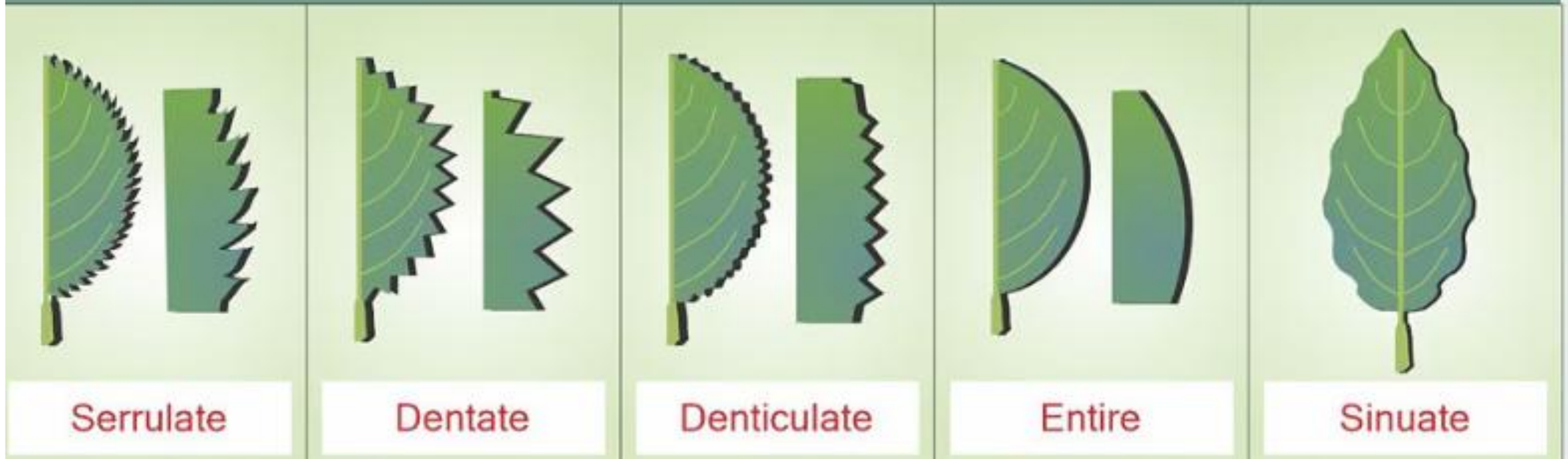

Truncate
Cordate
Sagittate
Hastate
Oblique
Asymmetrical
Peltate

LEAF MARGINS

Leaf margins, the edges of leaves, can be smooth, serrated, lobed, or wav



y, and their shape can help in identifying plant species and understanding their adaptations.



Runcinate

Lyrate

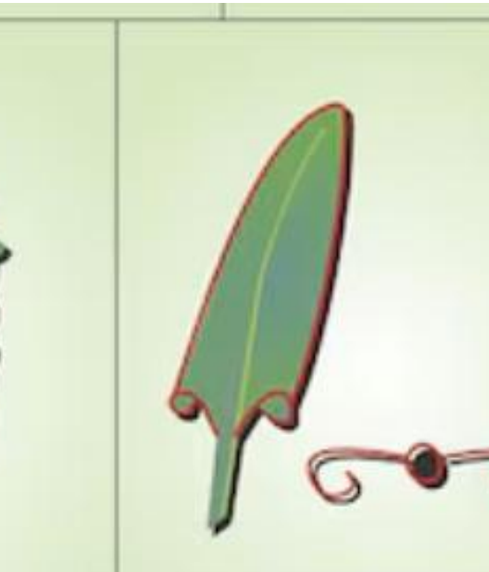
Ciliate

Lobed

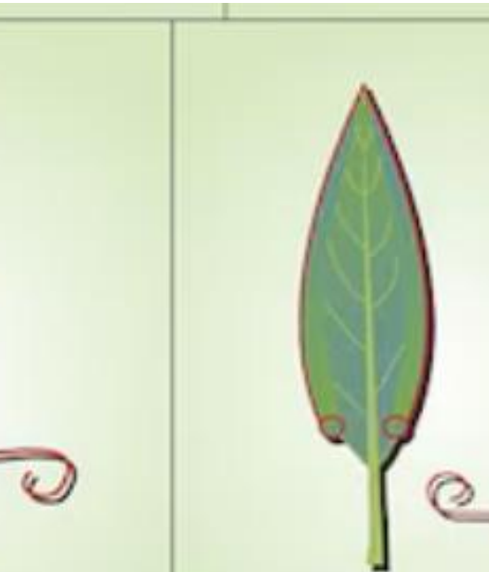
Pinnatifid

Laciniate

Erose



Revolute



Involute

LEAF ARRANGEMENTS

Leaf arrangements refer to the pattern in which leaves are attached to t

Basal or Radical

Aerial stem is very short.

Cauline

Leaves attached to the above-ground part of a stem.

Alternate

Growing singly on each side of the stem. 1 leaf per node.

Opposite

Growing in pairs on either side of a stem. 2 leaves per node.

Whorled

Arising at the same level on the stem. 3 or more leaves per node.

Petiolate

Having a stalk.

Sessile

Lacking a stalk.

Biternate

Sets or groups of 3, as a compound leaf.

Imbricate

Overlapping in a regular pattern.

Fascicled

A bundle or cluster of stems, flowers, or leaves (pine family).

Simple Leaf

A leaf having one blade.

Palmately Trifoliolate

Three separate leaflets arising from same node / petiole.

Palmately Compound

Four or more leaflets, radiating from one point. There is no rachis.

Odd Pinnate

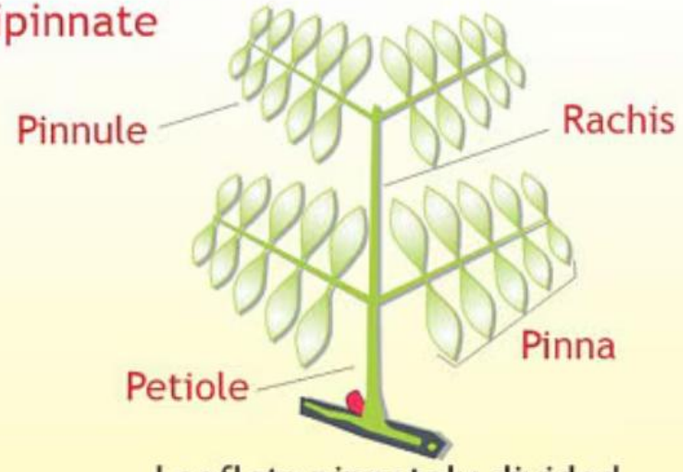
Pinnately compound with a single terminal leaflet.

Even Pinnate

A compound leaf not terminating in a leaflet.

https://www.etsy.com/il-en/listing/1763177969/botanical-leaf-identification-chart

Bipinnate



Leaflets pinnately divided into pinnules.

Tripinnate

As in a bipinnate leaf where the pinnules are further divided.

Cruciform
Cross like, 4 petals
eg. Bedstraw

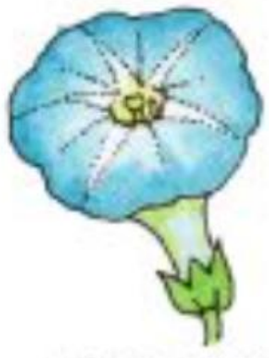
Coronate
Crown like
eg. Daffodil

Rotate
Wheel like,
with un-fused petals
eg. Tomato

Campanulate
Bell shaped
eg. Harebell

Labiate / Bilabiate
Lipped / 2-lipped
eg. Mint flower

Salverform
Tube with disc
of petals at the top
eg. Plumbago

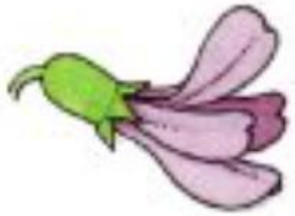


Funnelform
Funnel or
tumpet like
eg. Morning glory

Ligulate
Made of strap-like petals
eg. Daisy, many compositae

Stellate
Star shaped
eg. Day-lily,
many flowers with tepals

Urceolate
Urn shaped
eg. Heather



Papilionaceous
Butterfly like
eg. Vetch, the Pea family

Galeate
Hooded, or helmeted
eg. Dead nettle

Calceolate
Shoe or slipper-like
eg. Slipper orchid

Tubulate
Tube like
Corolla similar
width to tube
eg. Cigar flower

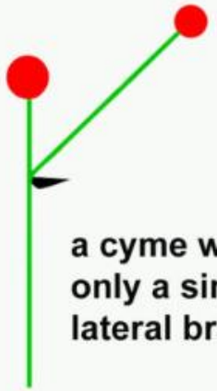
Crateriform
Shallow - bowl like
eg. California poppy

Saccate
lowest petal sac like
eg. Nemanthus

Cyanthiform
cup or bowl shaped
eg. Buttercup

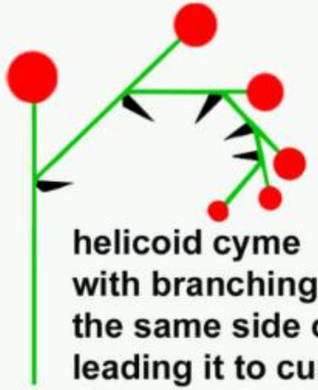
DETERMINATE INFLORESCENCES

(first flower to open is at the top or middle)



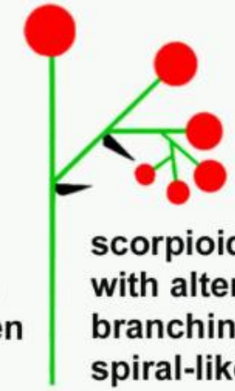
a cyme with only a single lateral branch

monochasium



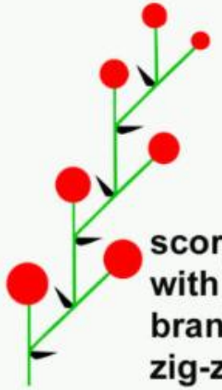
helicoid cyme with branching on the same side often leading it to curl

bostryx



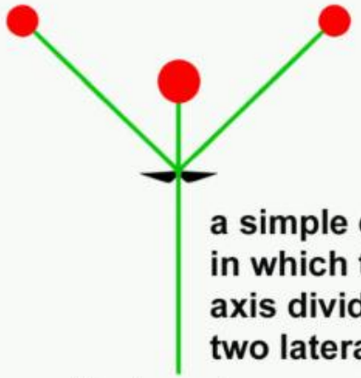
scorpioid cyme with alternate branching in a spiral-like pattern

cincinnus



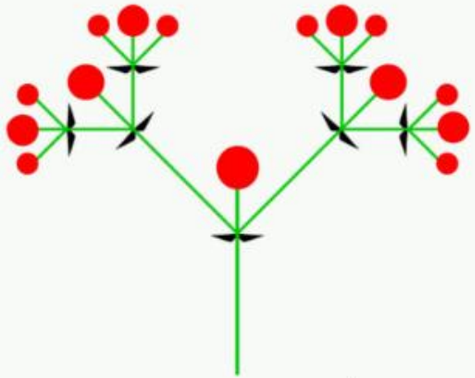
scorpioid cyme with alternate branching in a zig-zag pattern

rhipidium

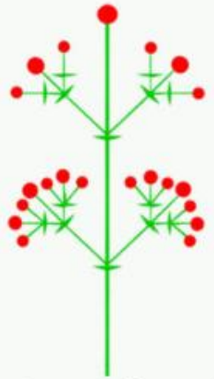


a simple cyme in which the main axis divides into two lateral branches

dichasium

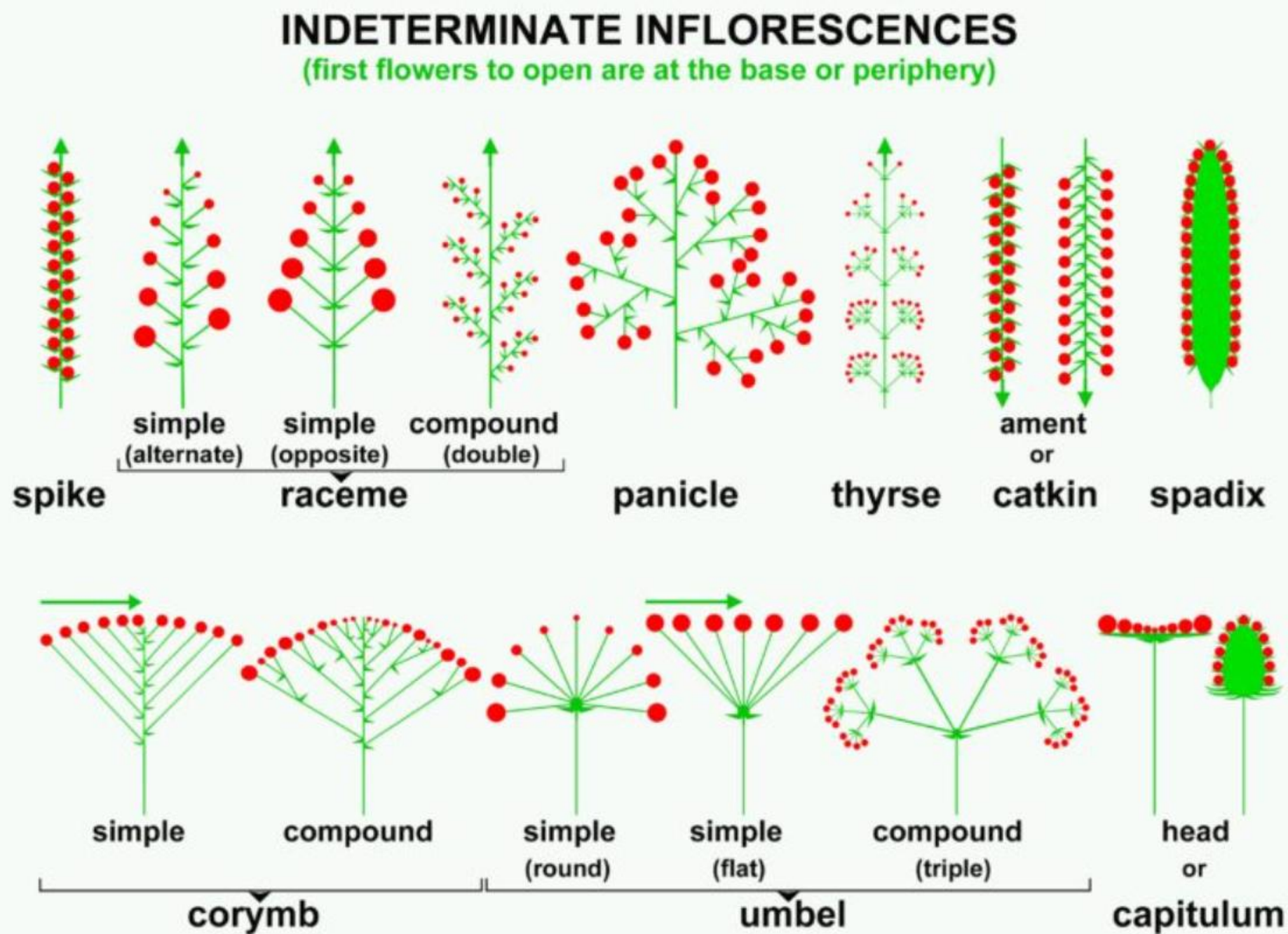


compound dichasium



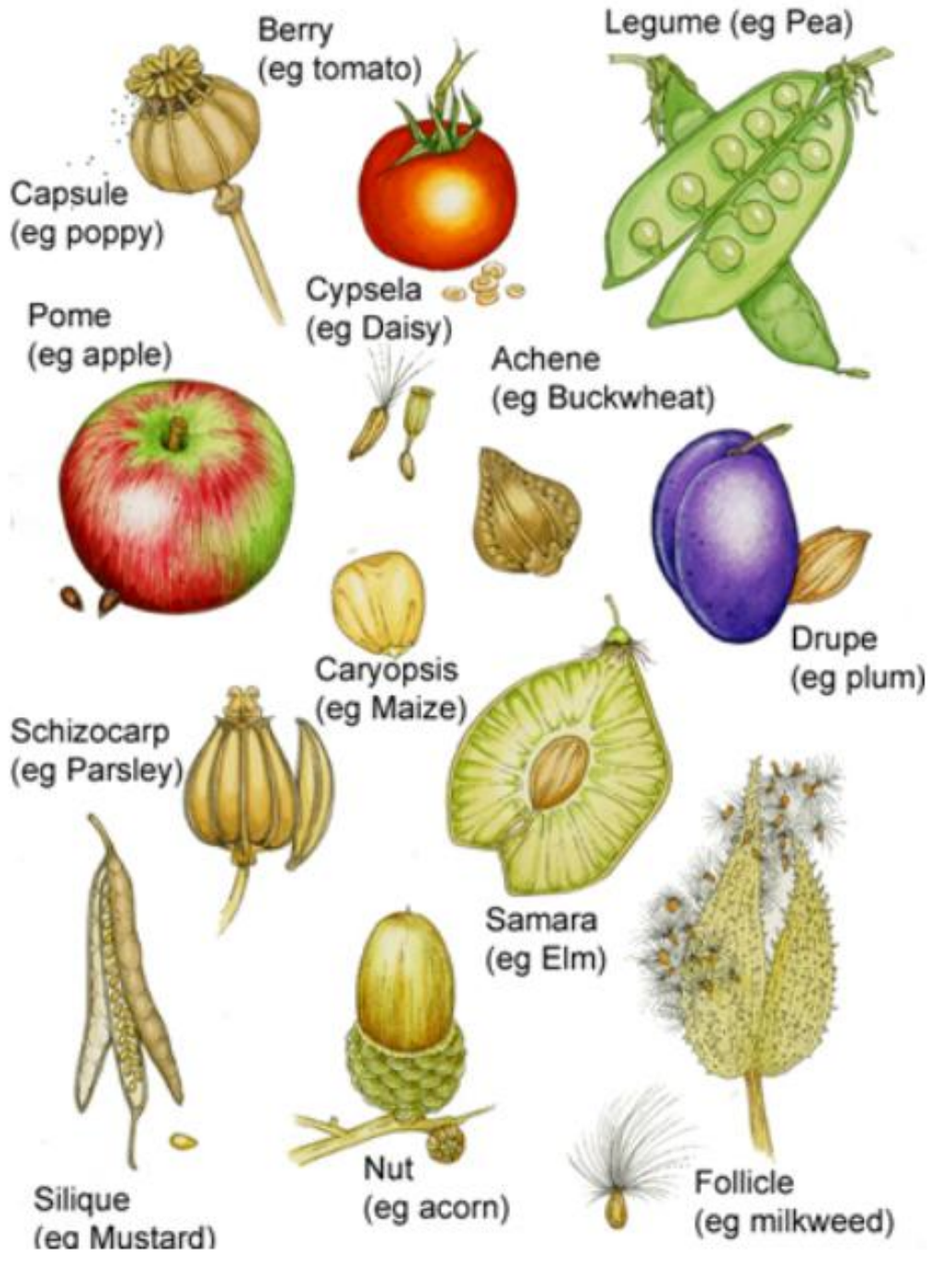
determinate thyrse

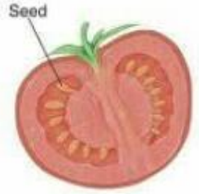
https://mgnv.org/plants/glossary/glossary-inflorescence/



Diagrams by Mary free

Type of Fruits





Berry (simple fruit)
A simple, fleshy fruit in which the fruit wall is soft throughout.

Tomato (*Lycopersicon lycopersicum*)

Drupe (simple fruit)
A simple, fleshy fruit in which the inner wall of the fruit is a hard stone.

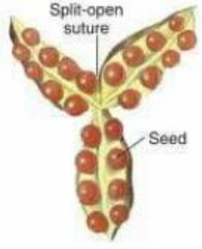
Peach (*Prunus persica*)

Follicle (simple fruit)
A simple, dry fruit that splits open along one suture to release its seeds; fruit is formed from ovary that consists of a single carpel.

Milkweed (*Asclepias syriaca*)

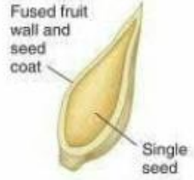
Legume (simple fruit)
A simple, dry fruit that splits open along two sutures to release its seeds; fruit is formed from ovary that consists of a single carpel.

Green bean (*Phaseolus vulgaris*)



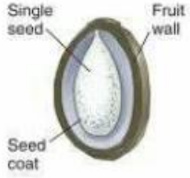
Capsule (simple fruit)
A simple, dry fruit that splits open along two or more sutures or pores to release its seeds; fruit is formed from ovary that consists of two or more carpels.

Iris (*Iris*)



Caryopsis (simple fruit)
A simple, dry fruit in which the fruit wall is fused to the seed coat.

Wheat (*Triticum*)



Achene (simple fruit)
A simple, dry fruit in which the fruit wall is separate from the seed coat.

Sunflower (*Helianthus annuus*)

Nut (simple fruit)
A simple, dry fruit that has a stony wall, is usually large, and does not split open at maturity.

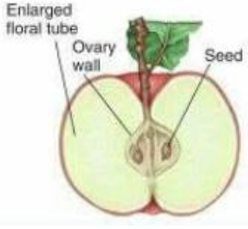
Oak (*Quercus*)

Aggregate fruit
A fruit that develops from a single flower with several to many pistils (i.e., carpels are not fused into a single pistil).

Blackberry (*Rubus*)

Multiple fruit
A fruit that develops from the ovaries of a group of flowers.

Mulberry (*Morus*)



Accessory fruit
A fruit composed primarily of nonovarian tissue (such as the receptacle or floral tube).

Apple (*Malus sylvestris*)

Rasadi Panchakaya: Ayurveda Pharmacology

Taste in Ayurveda

- **Taste (*Rasa*) in Ayurveda**
- In Ayurveda, **Rasa** (taste) is one of the fundamental principles used to understand food and medicine.
- Taste is perceived immediately when food comes into contact with the tongue and reflects the elemental composition of a substance.
- Ayurveda recognizes **six tastes (Shad Rasa)**:
  - Sweet (*Madhura*)
  - Sour (*Amla*)
  - Salty (*Lavana*)
  - Pungent (*Katu*)
  - Bitter (*Tikta*)
  - Astringent (*Kashaya*)

- Each taste influences the body's physiology, digestion, tissues (*Dhatus*), and the balance of the three **Doshas** (Vata, Pitta, and Kapha).

Overview of Taste in Ayurveda

- **The Ayurvedic Concept of Taste**
- Every taste is formed from a combination of the **five elements (Pancha Mahabhutas)**.
- Each taste has specific effects on:
  - Digestion (*Agni*)
  - Metabolism
  - Mental well-being
  - Dosha balance
- A balanced diet should include **all six tastes** in appropriate proportions to maintain health.
- Excess or deficiency of any taste can contribute to disease by disturbing the Doshas.
- Ayurveda uses taste as a guide for:
  - Selecting foods
  - Prescribing herbal medicines
  - Preventing disease
  - Restoring balance through personalized nutrition

Guna

- In Ayurveda, **Guna** refers to the inherent qualities or properties of matter (substances) that determine their effects on the body and mind. They are classified into different categories, primarily the **20 Gurvadi Guna** (physical properties) used to diagnose and treat the **doshas** (Vata, Pitta, Kapha), and the **Three Mental Gunas** that govern psychological states.
- The concept of Gunas forms the core of Ayurvedic pharmacology and lifestyle management, ensuring balance through the principle of "like increases like, and opposites balance".

The 20 Gurvadi Guna (Physical Qualities)

- These are organized into 10 opposing pairs used to evaluate the constitution of a person, the stage of a disease, and the properties of foods or herbs.
- **Guru vs. Laghu** (Heavy vs. Light)
- **Manda vs. Tikshna** (Slow/Dull vs. Sharp/Piercing)
- **Hima vs. Ushna** (Cold vs. Hot)
- **Snigdha vs. Ruksha** (Oily/Moist vs. Dry)
- **Shlakshna vs. Khara** (Smooth vs. Rough)
- **Sandra vs. Drava** (Solid/Dense vs. Liquid/Fluid)
- **Mridu vs. Kathina** (Soft vs. Hard)
- **Sthira vs. Chala** (Static/Stable vs. Mobile)
- **Sukshma vs. Sthula** (Subtle vs. Gross/Large)
- **Vishada vs. Picchila** (Clear vs. Slimy/Sticky)

How the Guna is Applied?

DOSHAS	VATA	PITTA	KAPHA
ELEMENTS	Space & Air	Fire & Water	Water & Earth
QUALITIES (GUNAS)	Dry Light Cold Rough Subtle Mobile Clear	Oily Sharp Hot Light Mobile Liquid	Heavy Slow or dull Cold Oily Slimy or smooth Dense Soft Static or stable Cloudy or sticky

Veerya

- In Ayurveda, **Veerya** refers to the active potency or biological power of any food, herb, or medicine.
- While the *Gunas* (qualities) describe how a substance looks, feels, and behaves, the **Veerya** is the specific force that makes it work inside your body.
- Therefore, Veerya can be consider as the **"active ingredient"** or the **"horsepower"** of a substance that dictates its immediate thermal and metabolic effect.

Forces of Veerya

- **The Two Primary Forces (Ashta-Vidha vs. Dwi-Vidha)**
- While classical texts discuss multiple classifications, the most universally applied concept in daily life and nutrition is the **Dwi-Vidha Veerya** (Two-Fold Potency). Almost every substance on Earth is categorized into one of these two thermal extremes: [1]
- **1. Ushna Veerya (Hot Potency)**
- Substances with a hot potency speed up metabolism, increase heat, and stimulate digestion. [1, 2]
- **What it does:** Increases sweating, burns toxins (*Ama*), improves circulation, and sharpens the intellect.
- **Dosha effect:** Pacifies Vata (cold/dry) and Kapha (cold/heavy), but increases Pitta (hot/fiery).
- **Everyday Examples:** Black pepper, ginger, garlic, chili, honey, and mustard. [1, 2, 3, 4, 5]

- **Sheeta Veerya (Cold Potency)**
- Substances with a cold potency slow things down, calm inflammation, and build bodily tissues.
- **What it does:** Cools the body, stops bleeding, stabilizes the mind, builds fluids, and reduces burning sensations.
- **Dosha effect:** Pacifies Pitta (hot), but can increase Vata and Kapha if used in excess.
- **Everyday Examples:** Mint, coconut water, milk, ghee, coriander, and watermelon.
-

Why Veerya Matters?

- **The "Opposites Balance" Rule**
- Understanding Veerya helps you make smart, intuitive choices for your health without needing a medical degree. Ayurveda operates on a simple law: **Like increases like, and opposites create balance.** [1, 2]
- **If you feel too hot:** If you have inflammation, rashes, heartburn, or a short temper (excess Pitta), you need **Sheeta (Cold) Veerya** substances like coconut or coriander to cool down. [1, 2, 3]
- **If you feel too cold:** If you have sluggish digestion, bloating, a slow metabolism, or seasonal congestion (excess Vata/Kapha), you need **Ushna (Hot) Veerya** substances like ginger or cinnamon to fire up your system. [1, 2]
-

Vipaka in Ayurveda

- Vipaka refers to the post-digestive effect or the ultimate biological transformation of food and herbs after they have been processed by your digestive enzymes.
- While Rasa is the initial taste on your tongue and Veerya is the immediate thermal energy (heating or cooling), Vipaka is the final "metabolic taste" that dictates how a substance behaves once it enters your tissues and bloodstream.
- Vipaka as the long-term footprint a food leaves in your body long after you have swallowed it. Modern pharmacology compares it directly to drug metabolism or pharmacokinetics.

Amla Vipaka (Sour Post-Digestive Effect)

- **Derived from:** Foods that initially taste **Sour**.
- **What it does:** It stimulates digestive enzymes, aids elimination, and sharpens appetite. However, it can thin tissues if used in excess.
- **Dosha effect:** It calms Vata, but increases Pitta and Kapha.
- **Everyday Examples:** Most citrus fruits, fermented foods, vinegar, and yogurt.

Types of Vipaka

- **The 3 Types of Vipaka**
- While there are six initial tastes (*Rasas*), your digestive fire (*Agni*) condenses them into just **three post-digestive tastes**:

1. Madhura Vipaka (Sweet Post-Digestive Effect)

- **Derived from:** Foods that initially taste **Sweet** or **Salty**.
- **What it does:** It builds tissue body mass, increases fluids, supports reproductive health, and lubricates cells.
- **Dosha effect:** It calms Vata and Pitta, but increases Kapha (the water/earth energy).
- **Examples:** Rice, wheat, milk, dates, and licorice root.

Katu Vipaka (Pungent/Spicy Post-Digestive Effect)

- **Derived from:** Foods that initially taste **Pungent (spicy)**, **Bitter**, or **Astringent**.
- **What it does:** It scrapes away fat, dries up excess moisture, cleanses channels, and can cause gas or constipation if overused.
- **Dosha effect:** It calms Kapha, but increases Vata and Pitta.
- **Everyday Examples:** Black pepper, chili, turmeric, neem

Taste and Vipaka

- Vipaka explains why a food doesn't always act the way it tastes. In many cases, **the post-digestive effect completely overrides the initial flavor**, allowing a substance to heal deep tissue issues.
- **The Ginger -Dry vs. Fresh:** Fresh ginger is spicy and has a Pungent Vipaka, which can be irritating to people with acid reflux. However, **Dry Ginger** (*Shunthi*) undergoes a **Madhura (Sweet) Vipaka** after digestion. This means dry ginger settles into the body as a soothing, tissue-building agent, making it safe for long-term digestive support without overheating your system.
- **The Pomegranate Exception:** Pomegranate is distinctly sour and astringent to taste. Yet, it breaks down into a **Madhura (Sweet) Vipaka**. This explains why it cools down internal inflammation instead of aggravating it like regular sour fruits.

Prabhava in Ayurveda

- In Ayurveda, **Prabhava** refers to a substance's **unexplained, specific, or unique action** that completely defies the normal rules of logic.
- {Taste (Rasa)} → {Potency\ Veerya } → {Post-Digestive Effect /Vipaka} ={Expected Outcome}
- **Prabhava is** the special signature of a substance. When two herbs have the exact same taste, the same heating/cooling energy, and the same post-digestive effect, but they produce completely different results in the body, that difference is caused by Prabhava.
- In modern terms:—a unique molecular structure that triggers an unexpected lock-and-key response in the human body.

- **Chitraka vs. Danti**
- These are two traditional roots used in Ayurvedic medicine. They share identical properties: they taste pungent, they are highly heating, and they have a spicy post-digestive effect.

- **The Prabhava:** Chitraka stimulates the appetite and burns away stomach toxins. Danti, due to its *Prabhava*, bypasses the stomach entirely and acts as a strong laxative to flush out the lower intestines.

Pharmacological Actions mentioned in Ayurveda

- The ultimate therapeutic effect a herb produces in the body is called **Karma** (Action).
- Classical Ayurvedic texts categorize these pharmacological actions based on how they alter the body's bio-energies (*Doshas*), tissues (*Dhatus*), and channels (*Srotas*)

- **General Actions based on dosha**
- **Dosha Shamana:** Actions that pacify and calm aggravated or excess Doshas.
- **Dosha Kopana:** Actions that purposefully aggravate or increase a specific Dosha (often used to mobilize toxins for clearance).
- **Metabolic and Digestive Actions (Agni Karma)**
- **Deepana (Appetizers):** Herbs that stimulate the digestive fire (*Agni*) without directly digesting toxins themselves (e.g., Ginger).
- **Pachana (Digestives):** Herbs that directly digest and clear accumulated undigested metabolic toxins (*Ama*) (e.g., Chitrak).

- **Cleansing and Elimination Actions (Shodhana Karma)**
- **Anulomana (Carminatives):** Herbs that digest toxins and gently direct body gases and stool downward for easy elimination (e.g., Haritaki).
- **Vamana (Emetics):** Herbs that induce therapeutic vomiting to eliminate excess *Kapha* (mucus) from the upper body.
- **Virechana (Purgatives):** Herbs that induce therapeutic bowel clearance to flush excess *Pitta* (bile and heat) from the liver and small intestine.
- **Tissue Building and Rejuvenation (Ayushya or Rasayana Karma)**
- **Rasayana (Rejuvenatives):** Herbs that slow down biological aging, prevent decay, boost immunity, and optimize tissue nutrition (e.g., Amla).
- **Vajikarana (Aphrodisiacs):** Herbs that nourish the reproductive system, increase vitality, and improve fertility.

Nomenclature

- is a structured system of names used to identify things in a specific field, science, or art.
- The word comes from the Latin roots *nomen* (name) and *calare* (to call). It essentially means a formal system for "calling things by their proper names."
- **Importance**
- Without a strict system, communication becomes chaotic. For example, a single plant might have hundreds of different regional nicknames (common names) around the world. A universal nomenclature system ensures that experts anywhere on Earth know exactly which object, organism, or chemical is being discussed.

- **Biological Nomenclature (Taxonomy)- one of the most common type**
- Used for plants, animals, and bacteria. It follows a strict system called **binomial nomenclature** (two-name system) created by Carl Linnaeus.
- **The Rule:** Every living thing gets a two-word scientific name in Latin or Greek.
- **The Format:** The first word is the **Genus** (always capitalized) and the second is the **species** (always lowercase). The entire name is written in *italics*.
- **Example:** *Terminalia bellirica*

Drug action according to Ayurveda and modern concepts

- **Hrudya** – Acts as a cardiac tonic; congenial for the heart.
- **Deepana** – Improves digestive strength. Ginger is known to enhance pancreatic digestive enzyme activity, including **trypsin** and **chymotrypsin**. *(Research)*
- **Ruchida** – Improves taste; useful in relieving anorexia.
- **Shophahara** – Relieves swelling and edema; possesses anti-inflammatory properties.
- **Kaphahara** – Balances **Kapha**; useful in productive cough and asthma.
- **Kantamayapaha** – Useful in throat disorders.
- **Svarya** – Improves voice.
- **Vibandhahara** – Relieves constipation.
- .

Drug action according to Ayurveda and modern concepts

- **Anahahara** – Relieves flatulence, abdominal fullness, and bloating.
- **Shoolajit** – Relieves abdominal colic pain.
- **Bhedini** – Relieves constipation.
- **Jihva Vishodhana** – Cleanses the tongue and removes white coating.
- **Kaphavatahara** – Balances **Kapha** and **Vata**.
- **Shwasahara** – Useful in the treatment of asthma and chronic respiratory disorders.
- **Kasahara** – Useful in cough and common cold.
- **Vamihara** – Relieves vomiting.
- **Hikkahara** – Relieves hiccups

Drug action according to Ayurveda and modern concepts

- Anahahara – Relieves flatulence, abdominal fullness, and bloating.
- Shoolajit – Relieves abdominal colic pain.
- Bhedini – Relieves constipation.
- Jihva Vishodhana – Cleanses the tongue and removes white coating.
- Kaphavatahara – Balances Kapha and Vata.
- Shwasahara – Useful in the treatment of asthma and chronic respiratory disorders.
- Kasahara – Useful in cough and common cold.
- Vamihara – Relieves vomiting.
- Hikkahara – Relieves hiccups